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ABSTRACT

The transfer of educational research into instructional practice through educational development is a complex process. A longitudinal study of five schools working with two development efforts illustrates the complexity of this process. Each development effort sought to create an "approach" that external linking agents could use to help schools modify their programs in specific areas. Data come from two years of participant observation and numerous interviews with teachers and administrators in the schools as well as linking agents from the development efforts. The study suggests that: (1) the knowledge transfer process consisted of four analytically distinct stages that overlapped in time; (2) developers rely on practical knowledge in different ways; and (3) teachers' practical knowledge is grounded in a pragmatic, concrete occupational culture. The knowledge transfer process is characterized by tension between research and practical knowledge which is worked out in different ways at each stage. (Author/GK)

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RESEARCH INTO USE: THE SOCIAL CONTEXTS OF KNOWLEDGE TRANSFER

William W. Donner

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Field Studies Component
Research and Evaluation Division
Research for Better Schools, Inc.
444 North Third Street
Philadelphia, Pennsylvania 19123

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Field Studies Component
Research and Evaluation Division
Research for Better Schools, Inc.
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PREFACE

Research for Better Schools (RBS) is committed to providing a balanced program of research, development, and technical assistance to educational agencies in the Pennsylvania, New Jersey, and Delaware region. A major part of the research element consists of Field Studies projects. One of those projects focuses on two of RBS' development efforts and the local schools participating in them. The development projects are creating approaches through which external agencies can help schools improve their curricula and instructional strategies in basic skills and career preparation. Schools participating in the development hope to improve their own educational programs. RBS intends to develop approaches and knowledge which will have generalizable utility.

This is one of several reports on the Field Studies' research. The five reports being developed in the 1980-81 year are intended to be of interest to researchers, school practitioners, and those charged with the operation and staffing of development and dissemination projects throughout the country. The reports cover two years of activity in five schools. Their purpose is to identify and clarify issues related to the support of local school improvement. A complete listing of all reports available from this project is found on the inside back cover of this document.

William A. Firestone
Field Studies Coordinator

ABSTRACT

The transfer of educational research into instructional practice through educational development is a complex process. A longitudinal study of five schools working with two development efforts illustrates the complexity of this process. Each development effort sought to create an "approach" that external linking agents could use to help schools modify their programs in specific areas. Data come from two years of participant observation and numerous interviews with teachers and administrators in the schools as well as linking agents from the development efforts. The study suggests that:

- The knowledge transfer process consisted of four analytically distinct stages that in fact overlapped in time--inhouse development, presentation of approaches by linkers, trial and use by educators, and feedback to developers. Over time, adherence to the research bases declined and the incorporation of practical knowledge increased.

- Developers rely on practical knowledge in different ways. One component relied on practical experience as the material for its approach while the other turned to an extensive research base on classroom processes. Moreover, practical knowledge from previous development efforts led to different images of practitioners. These images controlled decisions about how much local initiative would be built into the development approaches.

- Teachers' practical knowledge is grounded in an occupational culture that is pragmatic and concrete. This knowledge provides criteria used to evaluate development products and decide which elements to adopt.

In sum, the knowledge transfer process is characterized by tension between research and practical knowledge which is worked out in different ways at each stage.

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RESEARCH INTO USE: THE SOCIAL CONTEXTS OF KNOWLEDGE TRANSFER

There is a widely recognized gap between educational knowledge in the academic research community and the methods and knowledge used by teachers in classrooms (Havelock, 1969). This has been described as the difference between theoretical and practical (Doyle and Ponder, 1977-78) or technocrats and teachers (Wolcott, 1977). A great deal of attention has been given to this problem of "research utilization" in education over the last twenty years (Short, 1973); however, there has been relatively little effort devoted to the specific problem of how research knowledge is transferred and combined with preexisting practical knowledge possessed by practitioners. This paper identifies some of the complexities of knowledge utilization or transfer by exploring a specific case: Research for Better Schools' (RBS) effort to develop "research based" approaches for helping schools identify and correct deficiencies in specific areas of their instructional program. After identifying a set of discussion issues, this paper will discuss the process of developing these approaches and implementing them in schools.

BACKGROUND AND CONCEPTUAL FRAMEWORK

The transfer of educational research into instructional practice is no simple matter. Translations and transformations of the knowledge occur because the needs and conditions of classroom teachers are not the same as those of education researchers. As Campbell (1972) points out,

> Even for the strongest sciences, the theories believed to be true are radically underjustified and have, at most, the status of "better than" rather than the status of "proven." ...In any setting in which we seem to gain new knowledge, we do so at the expense of many presumptions, untestable--to say nothing of uncomfirmable--in that situation. While the appropriateness of some presumptions can be proved singly or in small sets, this can only be done by assuming the correctness of the great bulk of other presumptions. (p. 2)

Since any effort to test propositions about instruction must be based on a great many common sense presumptions, it seems likely that attempts to use such findings need to be grounded in substantial practical experience with the world to which those findings apply. Hence, specific findings are fragmented, often near the point of single propositions. Yet, educators often need synthetic knowledge, sets of propositions or more general principles to guide their work. Moreover, research tends to be framed in terms of a few variables and "other things being equal" the findings apply. But, educators work in specific settings where other things are never entirely equal because specific children, parents, and communities must be taken into account (Jackson, 1968). For these reasons, research knowledge must be supplemented or combined with a preexisting net of holistic knowledge.

These considerations raise at least three questions. First, what is the nature of the process for transferring knowledge from the research community to the school and classroom? A number of processes for this purpose have occurred in the field of education in the last two decades. These have differed in the extent to which the balance of control over the process rested with researchers or practitioners. An approach that

maintains fidelity to the original findings allows "experts" to make the changes. Usually, this is done through the creation of products such as textbooks, curricula, or the Office of Education's Project Information Packages (PIPs). In this case, translation is done through product development, and the developers hope that the product will be used as it was developed. The extreme alternative places greater weight on real world experience by letting educators make the translation. NIE's ERIC clearinghouses help bring research to educators but provide neither assistance nor control over the interpretations made or the use to which research is put. In between there are a variety of approaches employing human linking agents (Hood and Cates, 1978). In many instances, these approaches allow the educator to make modifications, while providing some assistance in locating and interpreting studies. However, the existence of linking agent approaches as well as studies illustrating that products are adapted and modified in use (Geenwood, Mann, and McLaughlin, 1975) suggest that there may be many links and stages in the chain from research to practice with substantial modification taking place at each.

Second, how is research knowledge combined with "practical" knowledge in the transfer process? Practical or craft knowledge in applied fields like education, medicine and engineering is accumulated and refined through on-the-job experiences. It is often less explicitly codified, but more comprehensive than research-based knowledge. Becker, Geer, Hughes and Strauss (1961) have documented how students at a Midwestern medical school come to value the practical knowledge learned through clinical experience over the theoretical or "book" knowledge learned in medical school:

> Clinical experience, in the view implied by this term, gives the doctor the knowledge he needs to treat patients successfully, even though that knowledge has not yet been systematized and scientifically verified. One does not acquire this knowledge through academic study but by seeing clinical phenomena and dealing with clinical problems at first hand. Clinical experience, even though it substitutes for scientifically verified knowledge, can be used to legitimate a choice of procedures for a patient's treatment and can even be used to rule out use of some procedures which have been scientifically established. (p. 231)

In the RBS school improvement projects, practical knowledge is possessed by all participants at all levels of the project. It varies according to the differing roles and expertise; program developers, linkers, and teachers all have different practical experience and knowledge. But at all levels, this practical knowledge is included in the approaches, procedures, and materials developed by RBS. This paper will describe how practical knowledge influences knowledge transfer.

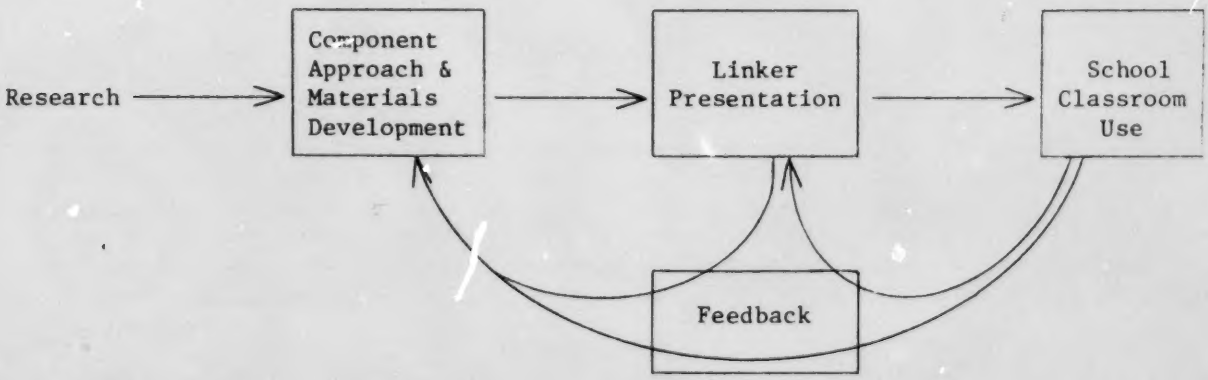
Third, how is research knowledge interpreted, understood and used by teachers? Teachers are active assessors and interpreters of research, and the standards that they use may have more to do with relevance and availability than the questions of replicability and validity as they are often defined by researchers. However, relatively little is known about how practitioners select and interpret research.

RBS' current effort to develop research-based approaches that help schools develop school improvement programs provides an opportunity to explore these questions. During 1978, RBS began developing approaches to help schools improve their programs in two areas: basic skills and

career education. Each approach was intended to transfer resources, knowledge and expertise from literature in a content area to schools in order to help schools assess their current programs and select changes that would strengthen those programs. The approaches were developed in two departments or "components": Basic Skills Component (BSC) and Career Preparation Component (CPC). Each included both developers who were responsible for interpreting research and creating materials and procedures for use in schools and linkers--that is, people who would help educators interpret and use the products of the developers' work.

The approaches were developed "collaboratively." Each component made agreements with three or four schools which allowed the linkers to bring out new products and materials as they were developed and try them in a real-life situation. Through this process, the components hoped to obtain practical experience that could be used to improve the approaches while the schools hoped to obtain assistance in upgrading their programs.

This approach to school improvement involved the transfer of knowledge and resources through several stages. These stages can be described graphically:



Each box represents a stage in the transfer process at which knowledge is transferred. To explore the questions about putting research into practice, the remainder of this paper will discuss how knowledge was transferred at each of these stages: (1) the components' development of an approach, (2) the linker presentation of that approach, (3) the school or classroom use of that approach and (4) how feedback from the sites was used to modify the approaches.

This paper suggests that two related but major factors affect the knowledge transfer process at each of these stages. First, each has its own set of social conditions that affect how knowledge is transferred. Second, practical knowledge relevant to the conditions in each stage must be integrated, aggregated or somehow combined with the knowledge that is being transferred. At each stage knowledge from previous activities is combined with practical knowledge relevant to that stage. Through feedback, practical knowledge at any one stage may affect the knowledge introduced at another.

METHODOLOGY AND DATA ANALYSIS

For the past two years, field workers from the RBS Field Studies Component studied the school improvement projects of the RBS Development Division using qualitative or naturalistic field methods (Field Studies, 1979; Guba, 1979; Glaser and Strauss, 1967). These field workers observed project meetings between RBS representatives and participants from eight different school districts. In the second year, they intensified

their efforts to understand the institutional contexts of the projects by spending more time in the faculty lounges, hallways, bathrooms and conference rooms of the schools participating in the project. Participants in the projects from RBS, district offices and schools were interviewed formally and informally throughout both years. Each field worker concentrated his/her efforts on one or two schools. Field notes were typed and made accessible to all members of the Field Studies staff and staff members had ongoing discussions about their findings.

In reaching the conclusions of this report, the author relied upon his knowledge of two BSC sites and the field notes from another BSC site and two CPC sites, all of which were the main responsibility of other field workers. Two other CPC sites were considered but in less detail.[1] Data analysis was checked with all Field Studies staff for both interpretive and descriptive accuracy. Rough drafts of this report were reviewed by members of the two components for their view of the report's accuracy and fairness.

The report covers the components' school improvement efforts from the fall of 1978 through the summer of 1980. Throughout this period both components were constantly modifying and adjusting both their approaches and materials to make their projects more successful. In every sense, their approaches were "developmental." That is, they were constantly changing their materials to reflect their experiences. Of necessity, this report must freeze the approaches of both components and the process

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[1]There was less intensive fieldwork in these sites.

of their implementation. The four stages that are described sequentially in this report were, in fact, occurring simultaneously at RBS, in principals' offices, at project meetings and in classrooms.

This report focuses on only one aspect of each components' work; their efforts to implement projects at "development" sites. Development sites are those sites where materials and approaches are field tested. There are many other aspects of both components' work, especially in disseminating the projects widely to many schools, that are not considered.

COMPONENT APPROACHES

Research knowledge about the content areas of each component was neither monolithic nor organized. Rather, it consisted of a mixed bag of research findings, journal articles and reports, many of which had different methods and concerns, and sometimes conflicting conclusions. Both components were confronted with the task of synthesizing and organizing these diverse knowledge sources about their content area into an approach to school improvement. The components had to transform these disparate knowledge sources into an integrated plan. Several factors affected this transformation.

First, the nature of the research knowledge base affected the component approaches. Both components shared a research base on the factors affecting school improvement projects, notably the Rand Reports on the implementation of federal educational programs (Berman and Pauly, 1975; Berman and McLaughlin, 1975; Pincus and Williams, 1979). Both components used this research to develop implementation strategies emphasizing

"collaboration" with local participants and "mutual adaptation" between component and schools.

The research in their content areas differed markedly, however. BSC had an extensive number of correlational studies about how classroom processes affect student achievement. These were quantified in terms of specific classroom behaviors and instructional variables. CPC's research knowledge consisted of much "softer" reports and papers that discussed the activities and goals of existing or planned career education programs.

Second, both components also relied on their practical knowledge and experiences in developing their approaches. Practical knowledge was based upon the staffs' previous experiences in school improvement work and experiences in the respective content areas. It was used by the staff to try to develop approaches that would have lasting impact in individual schools and a broad appeal to many different schools. This practical knowledge was far more important for CPC, probably because of its softer research base and emphasis on local program development.

Finally, both components were guided by paradigms or images of teachers and schools held by program staff. Sieber (1972) has shown how ideological "images" of teachers held by policymakers can lead to very different school improvement strategies. Firestone (1979) has argued that different images exist for schools and these have implications for school improvement strategies. These images are guiding assumptions about the nature of teachers and schools. They can be equated with the models and paradigms that organize the body of research about a content

area into an approach. These images are the components' assumptions about the nature of teachers and schools and are crucial factors in shaping their approaches.

The components chose different assumptions or images about teachers, schools and school improvement. Both components shared an image of teacher as "informed decision maker," meaning that given certain information and procedures teachers could chose rationally between alternatives. However, BSC used an input--process--outcome instructional paradigm or image of instruction to develop a comparatively highly structured set of technical procedures based upon research findings. CPC used a much more flexible paradigm emphasizing local development through a local needs assessment to develop a very open-ended approach that differed in each school. These images about schools and teachers provided the components with principles for organizing the disparate research and knowledge into an approach. To the extent that these images are built from previous experiences in schools and school improvement, they were derived from the staff's practical knowledge.

All of these factors influenced the approach to school improvement that each component took. BSC developed a comparatively structured approach that trained teachers in a set of technical procedures which diagnosed and remedied certain instructional functions affecting student achievement. Much of the training assumed a direct relationship between instructional variables and student achievement. CPC developed a very different approach that emphasized local identification of needs and

goals in career education and then local development of strategies to remedy needs and achieve goals.

BSC Approach

In developing training materials to help teachers make informed decisions, BSC used a process-product paradigm based on quantitative studies of instructional variables and student achievement outcomes. This gave the approach a comparatively highly structured format in which BSC trained teachers in technical procedures for making decisions based on quantitative data, although BSC left the actual selection of teaching strategies to the participants' discretion. Despite the structure of this approach, the BSC was collaborative and developmental. Procedures and materials were field tested and experiences from the field were constantly reintegrated into new materials. (This process will be described in the feedback section of this report.) Moreover, BSC expected a certain amount of adaptation and modification of its procedures and materials by school and teachers.

The content knowledge base for BSC included several process-product studies that correlated discrete classroom and instructional behaviors with student achievement scores. Although these studies often used different definitions and measures for similar kinds of behavior, they did provide BSC with quantified data about factors affecting student achievement.[2]

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[2] For more information on the studies used, see Huitt & Rim, 1980.

The BSC approach to school improvement was shaped by the image of teacher as a potential "informed decision maker" in using certain data and choosing strategies. BSC saw its goal as identifying important classroom factors that affected student achievement and providing teachers with the training to exert some control over those factors. Thus far, BSC has developed training materials that focus on two variables or variable clusters: Student Engaged Time and Content-Match. The Student Engaged Time materials focus on the amount of time a student spends productively working on designated tasks. Content-Match consists of two variables: Instructional Overlap and Prior Learning. These materials focus on comparing curriculum, instruction and standardized achievement test items. BSC has identified two other variables for future materials development: Quality of Instruction and Mastery. Each of these variables is subdivided into more discrete variables in the training materials. The current model used by BSC to explain its approach to classroom instruction is presented below (see Figure 1).

Note that this paradigm assumes a basic cause and effect relationship between measurable classroom variables and student achievement outcomes. This is only one of several alternative paradigms for instruction that could have been selected (Doyle, 1977). The choice of this paradigm had important consequences for the training materials. The BSC intended to train teachers to make instructional decisions that would change behavior measured through these variables. This training followed

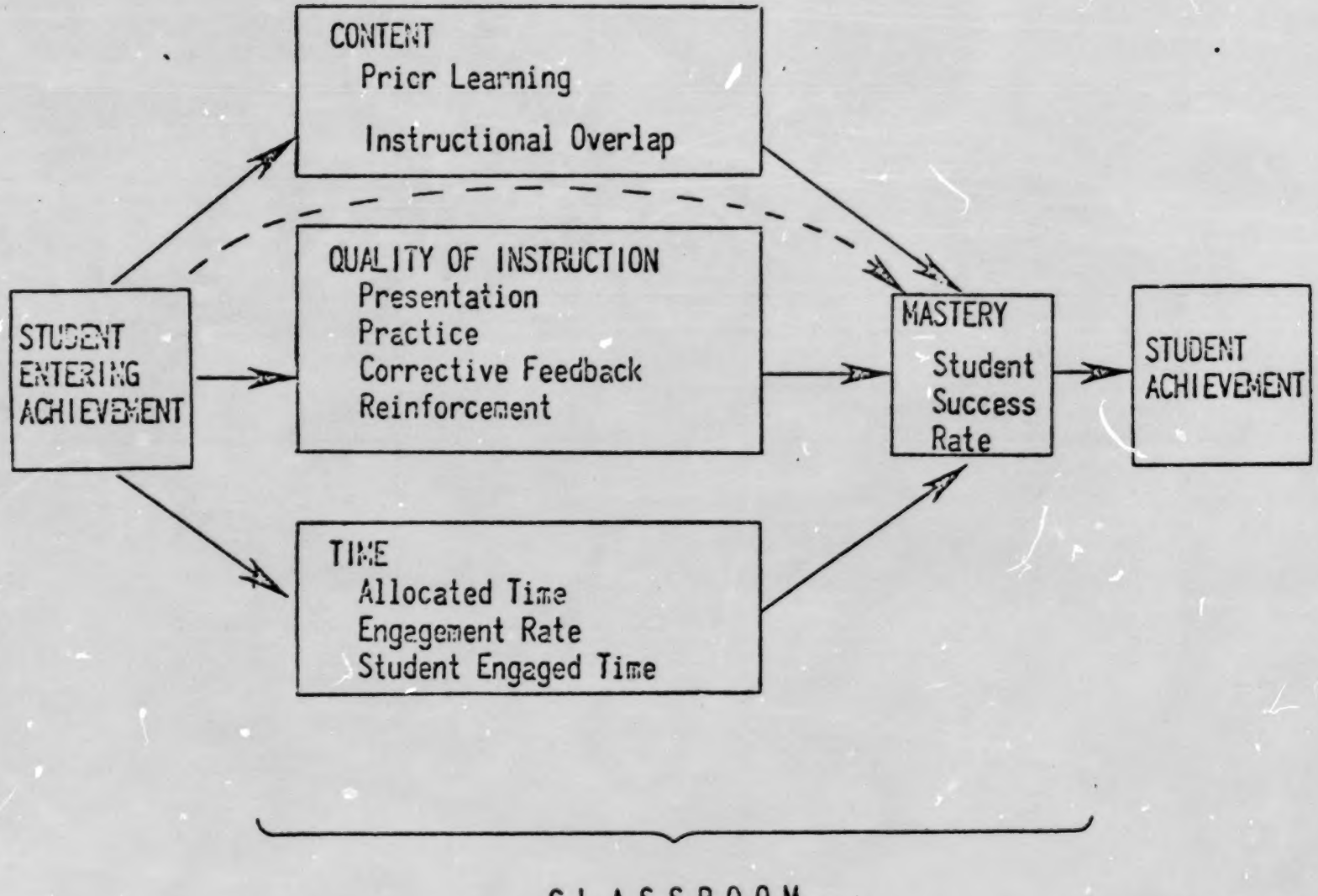

Figure 1: Some of the processes affecting achievement

a four-phase process developed by the BSC (see Figure 2). This training process is cyclical for each variable; that is, once Phase IV is reached, teachers do another round of decision making by returning to Phase I. The BSC acquired research information on each of these variables and then organized their training materials according to the four-phase training process.

Phases I and II are highly structured by the BSC. For instance, when conducting this phase for Student Engaged Time, teachers observe classrooms and count the number of students who are and are not engaged in learning activity at specific intervals. In later versions of the BSC materials, students unengaged behavior is classified into four categories: management/transition, socializing, discipline, and unoccupied/observing. Before actually observing to collect data, teachers learn to use the observation categories by coding videotapes of classroom teaching developed by BSC. A mastery test is given teachers at the end of the training to determine whether or not they had mastered the coding definitions. After this training observation takes place, the teachers were initially expected to go into each other's classroom to observe for several classroom periods. Every minute the classroom was scanned and the number of children in each category was recorded. At the end of the observations, teachers tallied the number of children in each category to determine the amount of time students were engaged in their assignments.

In Phase II, data from Phase I is compared with a series of reference graphs. These graphs show expected changes in achievement that can be expected for a given amount of time spent working on a task.

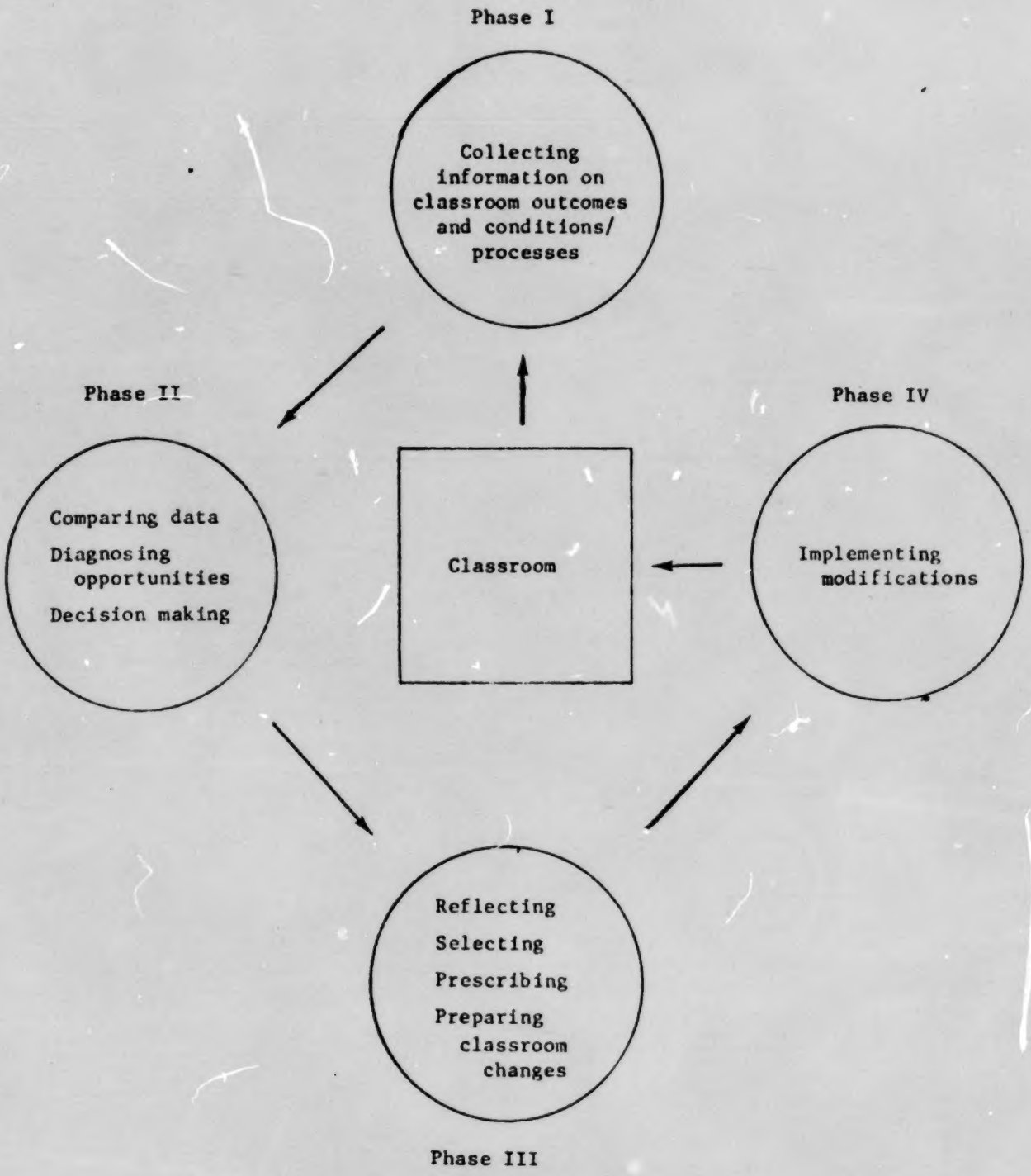

Figure 2: The four-phase basic skills instructional improvement cycle

Categories of unengaged behaviors can be examined to determine where potential impediments to student engagement are, and the reference graphs can be used for indications about improvement in student achievement.

The basis for both the definitions of behaviors in Phase I and the reference graphs used in Phase II is the 1972 Follow Through Evaluation Study (Stallings and Kaskowitz, 1974). BSC took several of the variables for its observation instrument and performed a reanalysis to get student achievement data.

Phases III and IV are less structured. In Phase III, BSC brings a series of general research findings about student achievement and engaged behavior to the participants and asks them to discuss their own classroom experiences. Teachers then select strategies that are expected to improve ratings on the variable. In Phase IV, these strategies are implemented. Later, more classroom data was gathered to monitor progress.

In the development of its materials, the BSC was guided by two principles: (1) the materials are to be in a form that teachers would use, and (2) they had to maintain the technical integrity of the original study or studies. The BSC was under constant pressure from participants to shorten the amount of time required by the project and to simplify its materials. Indeed, much of the practical knowledge used by the component in materials development was directed to simplifying and packaging the materials in a manner that would be acceptable to teachers. But the project was based on a model relating student achievement to classroom processes that necessitated adherence to complex, and potentially

time consuming, procedures. The tension between the technical procedures and pressures to reduce time requirements shaped the development of the materials for the entire two year period of the project.

CPC Approach

CPC had an approach that differed markedly from that of BSC. The CPC knowledge base was neither quantified nor in a cause-effect format. Moreover, CPC decided to use an approach that emphasized local development of the project. In general, the CPC materials were based largely upon the practical experiences of the staff and were non-prescriptive when compared to those of the BSC.

The knowledge base for career education used by the CPC consisted largely of descriptive accounts of other career education projects and programmatic statements about career education goals, objectives and activities. These sources included: (1) the organizational development literature, (2) other career education programs and practices, and (3) federal and state career education objectives (Career Preparation Component, 1979). In developing materials and implementing the project, there was a great emphasis upon the practical knowledge of the component staff. This included their own assumptions and experiences about what a career education program should be and how it should be implemented. This practical knowledge was used to select from alternative definitions of career education and to list career education goals and possible career education activities for schools to consider.

A guiding assumption of CPC was that teachers make "data-based decisions" as a result of their participation--a parallel to the BSC image of "informed decision maker." But CPC also placed a great deal of emphasis on local control of the project. Their notion was that each school should develop its own career education program with general resource support from CPC. The result was a project that is very much more open-ended than BSC and "data-based decisions" were based on a local survey of career education goals which were used by participants to make decisions. The emphasis was to work within the needs of each school, rather than to present a packaged approach. One member of the component said, "Individual linkers would work with schools and explain the general approach and schools would decide what they want." He explained to the schools that, "This is a way which might be profitable--if you want to go this way, we'll help; if you don't, we'll still help you." Although emphasizing local control of the project, CPC did develop some materials that gave the project a similar direction in all schools.

The component emphasized a few essential elements in all career education projects. First, they argued that all programs should be experience-based, that is students should be given some opportunity to participate in potential occupations. Second, it should include community involvement both in planning a project and having students participants in community occupations. Third, there should be systematic planning in developing the career education project. Apparently, all these features were derived from EBCE (Experience Based Career Education).[3]

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[3]EBCE was a previous career education project developed by RBS.

The third element was the most important for actual development of the project. In order to help schools with "systematic" planning, the CPC developed a ten-step sequential model for the implementation of a career education program. It should be emphasized that nobody in the CPC saw this model as prescriptive. Rather, it was viewed as a process; each step to be filled in by the participants in the project (see Figure 3). This open-ended approach was made explicit to participants by linkers early in the project. One started a session by saying: "Let's look at our notebooks. Notice that they're empty. They'll be filled out at the end of November with instruments and materials." Another linker described the knowledge base for the project: "We've been working for several months to identify what we're calling bits and pieces of effective programs. We've not been able to identify a single comprehensive program that is acceptable. But we're excited about the bits and pieces."

In brief, the ten-step model was a sequential plan for developing the project. During step 1 teachers worked out a list of goals for their career education project. During steps 2, 3 and 4, these goals were used as the basis for a survey of teachers, community and students respectively. The survey questioned these groups about how well the goals were being met. In step 5, the data collected during the survey was used to determine which goals needed to be emphasized. In steps 6 and 7, there was an assessment of school and community resources that were available to meet these goals. Step 8 was the actual program design. Invariably, this

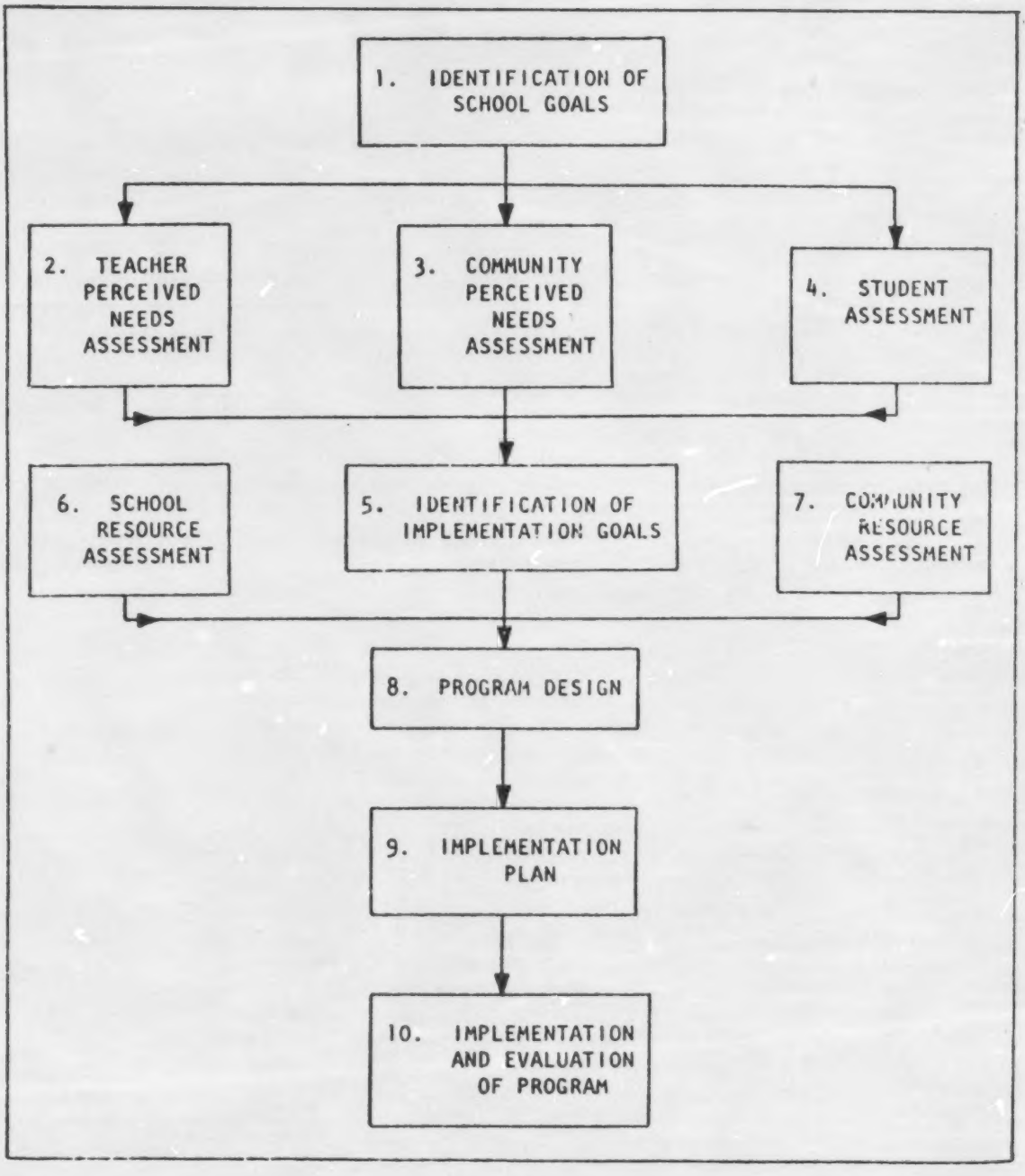
1. IDENTIFICATION OF SCHOOL GOALS
2. TEACHER PERCEIVED NEEDS ASSESSMENT
3. COMMUNITY PERCEIVED NEEDS ASSESSMENT
4. STUDENT ASSESSMENT
6. SCHOOL RESOURCE ASSESSMENT
5. IDENTIFICATION OF IMPLEMENTATION GOALS
7. COMMUNITY RESOURCE ASSESSMENT
8. PROGRAM DESIGN
9. IMPLEMENTATION PLAN
10. IMPLEMENTATION AND EVALUATION OF PROGRAM

Figure 3: Typical career education program improvement process

included writing objectives and activities to achieve the goals defined in step 5. Step 9 was the implementation of these activities and step 10 was an evaluation of the project.

As presented to the schools, this model had certain significant features. "Data-based decision making" is built upon the surveys conducted in steps 2, 3 and 4 and the resource assessments in steps 6 and 7. Once a set of goals is determined, the component pushed for a clarification of these goals. Goals were broken down into objectives and objectives were broken down into activities. These activities were most often classroom instructional strategies that teach career education as part of the regular curriculum. This was called "curriculum infusion." The integration of these career education classroom activities into the general existing curriculum through infusion was a major goal of the CPC approach. To help guide this process, CPC used its knowledge resources to develop lists of career education definitions, goals and activities. These lists were presented to participants who chose from alternatives in developing a local career education project.

The CPC provided further technical assistance in analyzing survey data and preparing an evaluation form. Moreover, it provided guidance on the project development phase by suggesting some basic "components" to implement a career education program. These included: infusion, mini-courses, special events, work experience, and a guidance program.

There was comparatively little in this approach to career education that was prescriptive. Most of the direction was provided by: a general

process (the ten-step model), a philosophy of career education, and listing of choices for participants (goals, alternative definitions, schedule of implementation, lists of activities, etc.). The research materials developed by the CPC were like a library. There were many different resources for participants to choose from in developing their own programs, but there was no package or programmatic set of materials for developing a specific career education project.

LINKER PRESENTATION

Both components used linking agents to adjust approaches to local needs and to provide feedback for future project development. Both components anticipated that their projects would have to be adjusted to local conditions and needs. For CPC this was, in fact, the essence of the approach. However, for BSC, any adjustments had to occur within the tolerances of the technical integrity of the project.

In presenting materials, linkers in both components had to use their practical knowledge about training, schools, teachers and change. This practical knowledge supplemented and, as will be shown, sometimes modified the materials developed by the components.

Practical knowledge was very important for the CPC linker because many of the project's implementation strategies were based on the personal experiences of linkers. BSC linkers used such knowledge to make strategic decisions about group dynamics and interpersonal relationships as well as on-the-spot decisions about materials modifications. However, the BSC linker role was more structured than the CPC linker role because linkers had to teach participants a specific set of technical procedures.

The roles of the linkers in both components entailed more than merely delivering resources and training. They also had to deal with a range of interpersonal and interorganizational issues. Most notably, they had to establish a good working relationship with participants that can be glossed with terms like "trust" and "support." They also had to facilitate constructive social relationships among participants. In short, they had to build a social context for the delivery of educational resources.

The BSC linkers adjusted their approach by increasing the flexibility of the materials to meet what the linker perceived to be local needs. In adjusting the materials to local needs, CPC linkers found that the sites needed more direction and guidance. Just as BSC introduced flexibility into its project in local sites, CPC tightened its project into more of an integrated plan under pressure from the local sites.

BSC Linker

The BSC linker had the responsibility for the successful implementation of the BSC approach in his/her schools. This had two major aspects or objectives. First, the BSC linker had a responsibility to train the teachers in the concepts, technical materials and procedures developed by the BSC. For achievement scores to rise, participants would have to follow the materials and procedures with technical accuracy. Second, the BSC linker also had to create and maintain a positive attitude among participants. If the participants became frustrated, stopped participating, or dragged their feet, the project would fail. Sometimes

the need to meet the second objective affected the way in which materials were presented. As one linker described the issue:

> When I first delivered materials, I felt a great deal of pressure to adhere to them, because it was the first time. It was our best thinking at the time. We had this big training thing. I felt there was a lot of pressure. But that diminished through the fall. It got to the point where I said, "the heck with the technical base. I want to keep these people happy."

This was not to say that the technical content of the project was invariably modified or changed at this stage. Indeed, most teachers seemed to have a working, albeit temporary, understanding of most of the project's procedures and concepts. Linkers walked teachers through many of the more complex technical procedures. As will be discussed in the next section, teachers implemented specific classroom strategies and had some general increased awareness about factors affecting student behavior. Generally, however, the transfer of knowledge from linker to teachers was affected by the necessity of establishing a positive social relationship between participants and linkers and the need to maintain morale among participants.

Two major factors contributed to the frustration of participants and affected the implementation of the project. First, participants from all levels felt that the project required too much time. Second, the tasks and technical procedures were often considered complex and hard to learn. Linkers responded in several ways. They made on-the-spot decisions to shorten materials when frustration became apparent; they provided help with technical materials and circumvented some of the

project's technical requirements; finally, they tried to establish a fairly close working relationship with participants. This relationship could be used to keep participants involved when they became unhappy with the project.

The time the project took could be cut by linkers at several points. For example, at one site teachers objected to the amount of their time the project was requiring. In planning classroom observations of each other for the Student Engaged Time Variable, teachers disliked a plan that would take up six or seven of their preparation periods. Administrators offered to do the observations, but there was considerable distrust and hostility toward the administrators. Teachers discussed these problems with the linkers. After checking with the BSC management, it was agreed that teachers would do only one or two observations. Although this limited the data about classroom processes, it was considered a necessary move by the linker to preserve the continuing participation of the teachers at that site. Another way to shorten the training time is to shortcut through sections of the materials. At the same site, during a very slow moving training session, a linker sensed teacher frustration and skipped parts of phase II moving into phase III - Strategy Selection. Phases I and II are the most technical and highly structured phases of the project. By shortcutting teachers through phase II and moving them into phase III, this linker moved participants to the phase where they actually discuss their teaching strategies. In general, phase III had the most lively discussions across all sites and participants responded

best to this phase. If pressed for time or feeling frustration among participants, linkers were most likely to curtail phases I and II.

The technical materials were not only time consuming, they could also be difficult to master. This could lead to a sense of failure among participants and increase dislike for the project. Linkers handled this general difficulty by trying to create a supportive, positive learning environment. They gave positive feedback to the teachers about their progress and tried to minimize criticism both by themselves and by other participants. When teachers had problems understanding concepts, they invariably offered encouragement and showed patience. However, sometimes the technical procedures were still too difficult for some participants.

For example, teachers were expected to score at a certain level of mastery on coding a training tape. Some teachers had trouble reaching the BSC defined level of competency and this caused frustration. Two linkers handled this problem by moving through the tape very slowly and giving teachers hints about what they should expect to see in the coming sequence. This prompting helped reduce teachers' discontent. However, it created difficulties in knowing if teachers really had the proficiency to use the observation instrument as originally intended.

Linkers established a positive, personal relationship with participants. The personal relationship could be used to keep participants involved when they were upset about materials and technical procedures. In one site with very high teacher-administrator tension, there was

increasing tension about the amount of time the project required. Teachers began indicating they would drop out of the project. The linker planned several informal sessions with teachers in which they voiced their complaints. The linker had a good relationship with teachers and was able to use this relationship to convince teachers that the project would improve.

Sometimes, linkers feared that poor materials would affect their own credibility and positive relationships with participants. Poor materials or difficult procedures adversely affected morale, and reflected upon the linker's credibility. This could be an especially major concern in those sites where the positive relationship with the linker was an important factor in the project's continuation at the site.

To guard against this, the BSC linkers often created some distance between themselves and the materials. They would constantly remind participants that the project is "developmental" and therefore materials may not be satisfactory at present. Sometimes, linkers would be openly sympathetic to criticisms of the project and would complain about technical procedures in order to show their agreement with teachers.

In summary, the technical training in the BSC project occurred in a social context that consisted of a positive relationship between the participants and a general positive attitude toward the project on the part of the participants. It was within this social context that the technical content of the project was transferred from the BSC to the participants.

CPC Linker

The CPC approach to career education emphasized local development of the project with general assistance from the CPC linkers. Originally, this general assistance was expected to consist of providing knowledge about alternative resources while letting each site develop its own career education project. Although linkers initially intended to play a passive role in the project's development, they came to have a major influence over the planning and implementation of the local CPC program. This altered the original intention of the CPC approach and gave the sites a surprising amount of uniformity.

Initially, CPC linkers introduced their project to local participants by de-emphasizing their own role in it. They wished to have a "collegial" or "support" role, and intended that local participants would take major responsibility for the project. CPC linkers gave the following views of their roles:

> You should treat what I have to say as if I am just another member of the team.

> I'm not going to run these meetings after this one. After this one I'll be around to facilitate some of the tasks. My job is to make sure we stay on task, but I'll be taking a back seat.

In fact, this "back seat" approach never occurred. Two factors forced the CPC linkers to take major guiding roles in their sites. First, the linkers felt obligated to provide a certain direction to the project. For example, in all sites the linkers pushed for a "broad" definition of

career education. They also pushed to have participants follow most of the steps in the ten-step model.[4]

Second, participants themselves seemed unable and unwilling to shape the development of the project. One problem was that career education was not clearly defined in the minds of participants. They needed guidance from the linkers in defining career education. Moreover, there was a lot of organizational work involved in the project that participants did not feel they had the time nor the expertise to perform. One high school administrator described the linker's role in the following words:

> He would come back with some ideas about how to do it this way or that way. To take the time to organize the information, it wouldn't have happened if it had been up to me. I just wouldn't have had the time to do it. It would have been much more haphazard.

Both by design and default the CPC linkers came to have a major role in the development of the project at each site. During meetings, they led the direction of the discussion. They spent a lot of time organizing survey results, the goal statements, the objectives and activities. In one site, the linker took responsibility for writing the goals and objectives. In several sites, they helped administrators write proposals for funding in career education. They took a leadership position in shaping the project's development when local participants could not or would not. For example, at one site, the principal who also acted as the coordinator of the project, often left the meetings and made few

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[4]They also pushed hard on other issues, but with less success: experience based components and community participation were advocated by linkers but not accepted by the two sites that are the primary focus of this study.

contributions to the career education project. The linker acted as the leader and took a major role in shaping the project. At another site, the teachers involved in the project were not inclined to do much work. Together with the coordinator of the local planning team, the linker developed the goals and objectives statements and an evaluation design.

Like the BSC linkers, CPC linkers had to create a positive attitude among participants toward the project. In some cases, this meant talking with individual teachers about the feelings toward the project and hearing their complaints. In one site, the linker had to alleviate faculty-administration tension that existed prior to the project. This tension was affecting some of the aspects of implementation of the project. The linker talked to different participants in the project and acted as a go-between in resolving their differences.

CPC originally intended to have an open-ended approach to career education in which each school developed its own program. The linkers were to have relatively minor roles. In fact, the linkers were forced to shape the development of the project. The result is that, despite an approach described on paper as open-ended, schools came away with surprisingly similar career education projects. This included a similar definition of career education, some broadly similar goals, similar objectives and activities, and an emphasis on infusion.

RECEPTION AND USE OF THE APPROACHES

Teachers and administrators were far from passive recipients of the RBS approaches. Each local participant brought a substantial body of

practical knowledge to his/her interaction with RBS. This knowledge took the form of concepts, definitions and maxims based in large part on individual experience in classroom teaching. In addition, each school had a set of norms for interaction. New knowledge and resources had to be integrated into these norms. This section describes how practical knowledge and pre-existing norms affected the knowledge and resources and the way in which the ideas in the approaches were learned, misunderstood, modified, accepted or ignored.

BSC Implementation

As originally conceived by some members of the BSC, the project would change teachers' decision-making activities and approach to instruction. In the BSC proposal to the National Institute of Education and in their approach to school improvement, there is the assertion that teachers would make more "informed" decisions in the classroom process areas covered by the BSC variables after participation in the project. An important initial objective of the project was to train participants in a set of technical procedures for making these decisions.

Teachers have a pragmatic orientation to instruction that is based on their own understandings and knowledge about classrooms and teaching. The materials, concepts and procedures of the project were filtered through this practical knowledge and pragmatic orientation. In general, the project initially appealed to teachers as relevant to their practical

needs. As they learned more about the procedures and concepts, teachers found some that conflicted with their prior understandings. Sometimes the new knowledge replaced this previous knowledge, sometimes it was rejected because of it. Finally, many of the technical procedures of the project were ignored or forgotten. However, teachers did experience an increased awareness about behaviors relevant to the training variable and they did use specific classroom startegies. This section of the report will discuss some aspects of how the project was initially received by teachers, how it was filtered through their previous understandings, and finally how it was used.

Many participants initially found the approach appealing on intuitive grounds. They believed that Student Engaged Time and, later, Content-Match were concerned with important issues. However, participants rarely understood the technical underpinnings of the project. Indeed, they did not have the technical training necessary to assess whether BSC had made an appropriate modification of the research base in their observation instrument or their reference charts. Even when problems were identified, procedures were usually followed. For example, although some participants questioned the validity of applying the Student Engaged Time research base of low SES students to middle SES schools (and BSC pointed out that this application should be made with caution), teachers did uniformly follow the Phase II of comparing their data to the reference graphs. In general, the participants trusted that the project had technical validity and could be useful for their instruction.

These very same intuitive grounds acted as a mechanism for interpreting and using the BSC training. For example, BSC expected teachers to choose classroom strategies (Phase III) based upon data collected in classrooms (Phase I) and the reference graphs (Phase II) tempered somewhat by teachers previous knowledge. But the strategies teachers selected sometimes differed in large measure from what might have been chosen if only data from Phase I and II were considered. For example, the observation instrument allowed teachers to distinguish between different types of unengaged behaviors stemming from management/transition and disciplinary problem. As one teacher remarked, "In this school, the number one problem is discipline." One administrator later said, "They started off with the mind set to select discipline strategies."

Moreover, it seems likely that teachers had existing standards for evaluating some of the behaviors measured by the observation instrument before training by the BSC. In two sites, teachers implemented specific strategies to increase the amount of time students spent on their work before these teachers had been fully trained in the data collection and comparison (Phases I and II) by the BSC.

BSC reference graphs usually indicate that the more time spent engaged on a task, the higher the student achievement. When it was suggested that one teacher increase the amount of allocated time in a subject area, she replied, "Forty-five minutes is plenty enough for a first grader... I'm not going beyond that." Several teachers in this site criticized the BSC emphasis on engaged time, claiming that children

need breaks and changes in what they're doing in order to get the most out of a lesson.

Moreover, participant's prior understanding of instruction affected their understanding of the BSC procedures. Many teachers had difficulty understanding certain BSC concepts that conflicted with their own previous understandings of classroom processes. For example, teachers often had difficulty understanding the difference between "management/transition" behavior and "engaged" behavior. The BSC defines certain kinds of trainsitional activities, such as giving instruction without academic content[5], as types of "unengaged" behavior because students are not working on specific learning activities. However, for teachers, "paying attention" is the crucial aspect of the child's behavior. Thus, there was some confusion among many teachers about why a child who was "paying attention" should be coded as "management/transition" (a type of unengaged behavior) on the BSC observation sheet. The emphasis upon having students "engaged" that is found in the BSC materials was filtered through some teachers' perspective as "doing what the teacher wants the child to do" or "paying attention."

Another conflict in perspective occurred because the BSC instrument measures only classroom-wide behavior. As the project was first described, there was no provision to record the engagement rates of

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[5]For example, when a teacher tells her class to turn to a certain page in a book.

individual children. Teachers often view engaged behavior as a result of the behavior of individual children - some who were attentive and well behaved, others who were not. Some teachers had trouble relating their perspective with its emphasis on the behavior of individuals with the BSC's perspective with its emphasis on classroom-wide behavior.

The BSC materials were not only filtered through the different perspectives on classroom behavior of participants, they were also affected by the social conditions and relationships of the participants in their schools. This context of social relationships within the schools further transformed the knowledge and technical information delivered by the BSC.

Teachers were expected to observe each other in recording engagement rates on the observation instrument. Often there was a great deal of sensitivity about engagement rates. Some teachers felt a certain collegial pressure to record engagement rates higher than they actually were. Observers would forewarn teachers about their arrival and even wait until a teacher had "set up" lesson activities before recording data. In at least two sites, this inflated engagement rates. In one site, a set of post-change observations indicated engagement rates of over 90 percent for all teachers in the project - a finding so high that it was regarded very suspiciously by administrators and linkers.

As used by teachers, the project seemed to have two general levels of impact. First, teachers felt an increased "awareness" about the behaviors reflected in the training variables. Second, all teachers implemented

some classroom changes. However, many of the specific procedures and definitions were forgotten or modified to fit the practical experiences of classroom teachers.

Most participants reported that the BSC projects created some increased awareness of what constituted good instruction. For instance, training relevant to Student Engaged Time seemed to create an increased awareness of the problems of classroom management and the amount of instructional time lost through handling paper. This new awareness was sometimes difficult to define. One teacher described it as follows:

> I guess RBS did point that out to me--that you do lose a lot of time passing out and collecting in the management part of your day and that time can be cut down and your instruction time can be added on to by having more things readily available.

Still others described what they learned more succinctly:

> It made me more aware of keeping the children moving from one area to another with less time loss.

> It made me more sensitive to classroom management and procedures.

> (It) made me more aware of the kids on task.

This awareness was also reflected in their use of new terminology such as "allocated time" (amount of time set aside for instruction in a content area) and "engagement rate" (percent of time student spends working on assigned task).

The new practices educators implemented were both diagnostic and instructional. Since the BSC approach was designed to identify problems--by collecting data on student engaged behavior--it is not surprising that

many of the new practices had to do with collecting data to diagnose instructional conditions. The key new diagnostic procedure was scanning the classroom to identify how many children are engaged. This scanning was a simplified version of the kind of observation teachers were trained to do as part of Phase I of the process. Administrators, especially principals, who participated in the project also incorporated this scanning activity into their ongoing classroom observation activity. One principal began filling out an observation form for each teacher evaluation that she did in her building. She did this for all teachers whether or not they participated in the project. She believes this gives her an "objective" basis for evaluation. Another principal claimed that she walks into classrooms and momentarily scans the room to take a quick count on engaged children. Other phases of the BSC process, such as comparison with reference graphs, were typically dropped as inappropriate for the simplified form of scanning. Instead, teachers implicitly assumed that for engaged behavior, "more is better."

Teachers also implemented a great variety of specific instructional practices. These changes were sometimes suggested by RBS and sometimes by other participants in the group. Sometimes they were changes a teacher had intended to put into practice but had not until motivated by participation in the BSC process. Popular strategies included giving students two assignments at the beginning of a class to be worked on consecutively thus cutting down on management/transition time, using a behavioral rewards system to maintain discipline, and setting up individual projects

that students could work on after completing their regular assignments. These strategies were designed to increase the amount of time students spent actively engaged in their work. The variety of specific practices reflects the BSC's emphasis on diagnosing conditions rather than advocating specific practices.

These outcomes reflect something important about how teachers used the BSC procedures and concepts. Specific instructional strategies were selected because teachers believed they could be easily integrated into their instruction. At a much more general level, teachers said they were using some of the component's concepts to make themselves more "aware" about instruction. Thus, most of the technical concepts were modified and simplified when used by practitioners. What they kept were diagnostic and instructional strategies and a general increased awareness of aspects of good instruction. This may be interpreted as a pragmatic adaptation of the project to the practical circumstances in which teachers operate.

Implementation of CPC Project

Although the CPC project was oriented to local needs assessment and local development of the project, linkers provided local sites with a fair amount of direction. Many of the concepts, activities, and techniques brought to schools by CPC were modified, however, by teachers in their actual implementation of the project.

Like the BSC project, the CPC project had to be integrated with the participants' previous understandings about instruction and school improvement. In the case of CPC this posed three general issues for

participants: (1) what was meant by career education? (2) what was meant by the concept of infusion? and (3) how to base their decision making on the data collection?

Career education was not a precisely defined content area in the minds of most participants. Indeed, the first task of CPC linkers was to work out a definition of career education with the local planning teams. One member of the CPC recounted:

> The first thing we learned when we came to defining career education and developing career education goals, it went on and on and on. It was much too long for the following reasons...many people on the local planning team had never heard of career education before or their exposure to it was very cursory.

Understanding the concept of infusion caused difficulty for some participants. CPC intended infusion to occur at two levels: at a school-wide level in the general school curriculum and at the classroom level within the teacher's existing instructional plans. In both levels, CPC intended for schools and teachers to keep their regular curriculum, but to find ways to draw examples of career education activities from within it. As an implementation strategy, infusion was opposed to career education activities that were "add-ons." In that case, teachers would add separate career education activities to their regular curriculum. The former approach was preferred because CPC felt that add on activities are usually dropped after the duration of the project.

Participants had to separate types of difficulties with infusion. Some teachers simply did not seem to understand what was meant by the

concept. These teachers proceeded to add on career education activities because they did not understand that they were expected to work from their regular classroom curriculum. This was a special problem for teachers who joined the project late and did not have the time to develop the shared understandings possessed by longer term project participants.

Second, some participants believed it was much easier to add on than infuse. Teachers could find career education activities on the lists supplied by RBS. Rather than try to examine their curriculum and try to find career education examples, it was easier to add on activities or rewrite the curriculum. One administrator described the problem:

> It's easy to get agreements on what goals are...but you're whistling Dixie unless you can make it so easy that a teacher doesn't even know they're doing it. The only way we will do it is if it's in a program they can pick up just like the D.C. Heath program. The teachers are comfortable with the textbook and that essentially becomes a curriculum. Until you do the same thing with career education, it won't get done. If it's by choice, it won't work.

CPC intended for teachers to make "data-based decisions" derived from surveys about career education goals that were taken in the school and community. However, this data-based technique was modified by the participants' own intuitive feelings about the goals that were most important. For example, in one site, after the results of a survey were examined, teachers felt that some goals that were not being met were not on the survey. These goals were added to the list. In this site, teachers selected activities that they felt could fit into their lesson plans. These activities did not necessarily correspond to goals and objectives

selected by the local planning team, but were chosen for reasons of personal interest or convenience.

Local norms for social interaction also determined which aspects of the project were implemented. Originally, linkers emphasized the importance of experience education, community involvement and data based planning as the three important features of the career education program. In both CPC schools, experience based education was eliminated by district administrators who had adverse experiences with having students go into communities. Community involvement was minimal.

There was a parallel between CPC and BSC outcomes. CPC participants implemented specific classroom activities and they seemed to have a greater awareness about career education. Classroom career education activities were sometimes infused, in the sense that the activities were structured into the curriculum. Other teachers seemed to include only add-on activities. In both cases, discrete classroom activities could be incorporated into the teachers' instruction. At a more general level, some participants claimed to have an increased awareness about career education. Several participants found themselves looking for potential career education activities as examples while working in unrelated areas, such as searching for general resources or even reading the paper.

REVISING THE APPROACHES

Both components viewed their approaches as developmental. They had entered into relationships with schools in order to obtain experience

that could be used to revise and refine the approaches. Indeed, one of the linkers' tasks was to bring information on the use of materials back to the developers at RBS.

The feedback process is complex. Linkers may make on-the-spot modifications that are never relayed back to the component. Some feedback may be ignored by the component because it affects features of the project that are considered integral. Some feedback results in actual modification of materials and approach. Just as teachers filtered the materials presented by RBS through their own perspectives and assumptions, a similar filtering process integrated feedback with materials and approach.

Feedback, like other forms of information, flows in channels. The most important channel is through the linker to the component. Two different types of feedback can be distinguished: formal and informal. Formal feedback occurs when a component has a meeting or official institutionalized mechanism for revising materials according to experiences in the sites. Informal feedback occurs in the hallways, in offices and at Howard Johnson's on the road; staff members, usually linkers, exchange experiences and provide each other with tips.

The different ways in which feedback affected materials in each component was a reflection of their different approaches to school improvement. BSC had a highly structured approach in which field testing was constantly reinterpreted into materials and approach. CPC had a

much more open-ended approach in which experiences from sites were shared among linkers but were not necessarily reincorporated into the materials.

In both components, materials modification reflected a tension between two major forces: the approach to the content area taken by the component and the social condition and cultural understandings of teachers in classrooms. The actual development of the materials is a process of negotiation between these two poles. RBS linkers act as the major brokers in this negotiation process. The process of negotiation is subtle and complex. To some extent linkers are able to push through certain aspects of their project whether the local participants like it or not. But there are areas targeted for change by both components which administrators and schools will refuse to accept.

A kind of brinksmanship can develop. The site usually feels some commitment to RBS and a need for its resources. This commitment is reinforced by the fact that administrators have supported the project and some of their credibility rides on the project's continued presence. On the other hand, there are aspects of each approach which are too costly to implement. From the RBS perspective, sites are needed to prove to the funding agency that a successful project is being conducted. Thus the sites and the components are committed to each other. The negotiation between site and component tests the limits of this commitment. Each side has objectives to achieve, but does not want to push so hard that a rupture occurs.

This section will discuss the teachers' reactions to the materials and how this affected the materials development.

BSC Feedback

The BSC intended to develop materials collaboratively with participants in their school improvement projects. In their proposal to NIE, the BSC defined collaboration in the following terms:

> a working relationship in which the expertise each collaborator brings to the task is recognized and respected by the others. Accordingly, responsibility in collaboration is expected to shift among the participants as the nature of the need varies. In such a relationship, the respective participants are the judges of the degree of compromise that they perceive for their contributions. (Basic Skills Component, 1979, pp. 13-14)

The input and feedback from participants were considered to be crucial for the development of BSC materials and approach. BSC intended to learn from the practical knowledge of participants and build its own base of practical knowledge about implementation of its approach.[6] The problem confronting the BSC was to integrate this practical knowledge into their approach while maintaining a technically legitimate relationship with its research base.

Moreover, there were external pressures contributing to materials modifications in the BSC. First, BSC was committed to developing a project that could be disseminated to many different intermediate service agencies and schools. This meant the project had to have widespread appeal. Second, BSC was concerned about losing sites participating in the project. Administrators and teachers in these sites could express

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[6] Note that these types of practical knowledge are different because they are relevant for different stages of the transfer process.

dissatisfaction and BSC would have to make modifications to insure their continuing participation.

Feedback was continuous and ongoing, occurring at different stages in the project. Linkers might discuss the reception of materials and give each other tips about possible modifications in the presentation of these materials. Other feedback would be directly incorporated into materials. For example, as a result of teachers' concerns, the BSC developed an observation form that allowed teachers to record the behavior of individual students (the original observation form measures only classroom-wide behavior). A new category for "pullouts" for special education classes was added to the observation form. This was done at the request of a school that had a large number of Title I students and teachers wanted to be able to record how this affected the amount of time their students spent in their homerooms.

Most of the general feedback received from participants indicated that the BSC had a useful but time-consuming and complicated project. The following participant comments are typical reactions to the amount of time that the project required:

> Our main problem is that we didn't know how much time it would entail.
>
> It seems to have its good points but it's taking up so much time that I can't get to my regular work.
>
> It takes so long to get teachers actually to the point of using the project that they lost interest in it.

One BSC staff member summed up the kinds of changes that have been made:

> (most of the project's changes)...have to do with the complexity of what we tried to do. We've tried to diminish the time requirements - again and again and we are still trying to get them down even further.

As a result of this kind of feedback, most materials changes over the past two years shortened and simplified materials. For example, the BSC had developed an observation instrument for Student Engaged Time by modifying the form used in the Stallings and Kaskowitz (1974) research. The observation instrument required observations for the entire instructional period over three days, each done at 15 minute intervals. BSC decided to keep observations to 15 minute observations at one minute intervals spread out over at least three separate days. There has also been a general shortening and simplification of the amount of materials needed for training. BSC originally expected each participant to fully learn all aspects of the project. However, at the end of the first year, BSC decided that complete materials would only be given to those responsible for training others in the project. The trainers would then be able to choose how long and complex the materials and training should be. In the most recent materials development, options range from one 15 minute observation to as many as is possible. There has been a general trend to simplify and decrease the amount of materials given to teachers. Trainers are given full notebooks with expanded explanations of the project; teachers are given a few handouts at each training session that will explain what BSC feels it is essential that they understand in order to successfully implement change.

The incorporation of feedback into materials reflects the BSC staff's concern with the processes that are the subject of this report. BSC wants to develop an approach to school improvement that can be synthesized with the practical knowledge already possessed by teachers and administrators. However, BSC has a technical approach and a set of assumptions about instruction that must be preserved. Many of the BSC changes in materials over the past two years can be seen as an attempt to resolve the tension between these two objectives.

CPC Feedback

CPC did not have nearly as extensive dissemination activities as BSC. Therefore, there was much less pressure on the component to revise and modify its materials. Moreover, because there was a great emphasis placed on developing a project according to the needs of each local site, there was little central coordination of the feedback.

Feedback flowed in two major information channels: formal and informal. Formal feedback occurred when technical staff members debriefed linkers about their experiences at the sites. As a result of these debriefing sessions, technical staff developed a set of materials that incorporated the experiences of linkers to use for future career education projects. A set of booklets was developed that presented important aspects of implementing a career education project. These booklets focused first on providing a definition of career education. As discussed

above, many participants were vague or unsure about the meaning of career education. Second, the booklets provided strategies for developing and implementing a career education program.

Informal feedback was a continuous and ad hoc process. Some linkers met informally among themselves to compare experiences and exchange information about the progress of their respective projects. This informal feedback was used to prepare for specific implementation problems in the sites and usually concerned the pro or con experiences of the linker with implementation. For example, one linker had eliminated the stage of breaking goals into objectives, allowing participants to move directly into activity writing. He advised another linker against such an approach, because he found that without clear objectives, activities were not clearly connected with goals. Informal feedback was the major channel for feedback in the CPC because (1) materials development in CPC was behind the implementation process in each site, and (2) because the project was directly oriented to developing unique projects within each site.

DISCUSSION

This report has outlined some of the factors affecting the knowledge transfer process by describing four analytic stages of the process in the school improvement efforts of both components. At each stage, the way knowledge was altered to meet different needs and circumstances was described. This report must be considered tentative. The RBS school improvement projects will continue for several years. Moreover, many of

the issues raised in this paper need further empirical research. Nevertheless, the remainder of this report presents tentative answers to the three questions raised earlier.

First, what is the nature of the knowledge transfer process? The knowledge transfer process that RBS' two components engaged in consisted of four analytically distinct stages that in fact overlapped in time: inhouse development, presentation by linkers, trial and use by educators in school districts, and finally feedback to developers for revision. Adherence to both the general implications and the specific procedures of the research base was most apparent during the earlier stages and declined as the development process continued. During internal development, literature reviews were conducted, studies were identified, and in some cases, data were actually reanalyzed. Even at this stage, however, substantial transformations of the research took place as materials, concepts and definitions were developed into approaches guided by the images of schools possessed by developers. The outcome of this stage was written materials such as observation instruments, manuals and descriptions of various models that were intended to reflect research implications and also be usable in schools. Linkers initially tried to preserve the integrity of the component approaches as they were originally conceived, but they also had to keep local participants happy about their collaboration with RBS. This need to keep projects alive was an important factor leading to modifications that affected materials but kept the projects moving. Teachers

and administrators had a number of standards for judging the utility of the approaches. These included their own practical knowledge about what would work in their own specific situations and norms for interaction that characterized their schools. Finally, results of experience in the field were fed back to the developers who modified materials accordingly.

The second question is how are research and practical knowledge combined? Practical knowledge entered into every stage. Component developers drew on their own practical knowledge in their initial development efforts. For instance, the pressure to shorten and simplify was anticipated by developers who tried to both reduce the complexity of component procedures and develop simple explanations even before approaches were field tested. Linkers drew upon their expertise in group dynamics developed through previous experiences with the "nuts and bolts" of implementing projects in schools. The linkers had to understand and anticipate the interpersonal and motivational barriers that could develop when approaches were tried in the field in order to facilitate local implementation. Teachers used their practical knowledge to both assess the projects' general validity and identify specific aspects that they believed would be useful in their classrooms.

Initial provision for feedback through collaborative development is also an indication of practical experience through previous development efforts. Moreover, this feedback contributed to the components' practical

knowledge as development proceeded. By continually field testing their materials, the components began to build expertise about what would work in schools. Moreover, linkers gained expertise on implementing the approaches. This expertise included a practical experience both with the specific problems in each approach and a more general knowledge about school improvement. This knowledge was sometimes reincorporated into materials, and it consistently became a part of the personal experience of the linkers.

The extent of reliance on practical knowledge distinguished between the approaches that the two components took. BSC relied rather heavily on research relevant to basic skills instruction. Its knowledge base consisted primarily of a series of quantitative studies of the relationships between specific classroom, curricular and student variables with student achievement. The whole thrust of the approach was to develop procedures to help teachers collect data on the variables that these studies indicated were significant contributors to learning and then to help teachers improve their "scores" on those variables by changing instructional strategies.

The CPC knowledge base did not depend on the same kind of quantitative studies measuring variables affecting clearly operationalized dependent variables relevant to career education. Instead, there were philosophical statements about what a career education program should be

and descriptions of other career education programs. These were a knowledge base resting on practical knowledge gleaned from both written discussions of programs and issues from the direct experience of component staff. Practical knowledge was also more important to CPC because of its emphasis on local development of unique career education projects. Local development required substantial reliance on linkers' practical experience with both career education and project implementation.

The components differed in their use of practical knowledge in another way. Each distilled their experiences from previous development efforts into a series of images of what schools were like and how project planning should take place. BSC's image of the school was one where informed decision makers could be trained to apply data-based decision-making procedures grounded in and derived from their research data base. CPC's image was that local practitioners had the ideas and capacities to design their own projects, but that they needed assistance in learning how to collect data, determine goals and implement changes in a systematic manner. The capacity for local initiative played a greater part in CPC's image of practitioners.

In sum, it seems that the knowledge base on which an assistance effort is based will have important impacts on the implementation process that follows. The issues facing an effort driven by extensive reliance on research knowledge will be quite different from those in an effort relying on practical knowledge. The challenge in the first case is to simplify, in the second to create, content. However, the developers'

initial images of how practitioners act to plan and implement changes seem to be important factors in their own right that can have a substantial impact on the process of putting knowledge to use.

The third question is how was the knowledge and resources possessed by RBS interpreted and used by the targeted users of that research? In the projects of both components, teachers adopted specific instructional strategies and activities. Moreover, they felt that they had an increased understanding about a content area (career education) or instructional factors affecting student achievement (student engaged time). It seems that they developed a general level of awareness of some new concepts and incorporated procedures that had immediate consequences in the classroom. Many technical procedures or concepts that were not immediately applicable to classroom conditions were not completely learned. For example, teachers were able to implement career education activities regardless of whether they understood the concept of infusion. Similarly, in BSC sites, many detailed technical procedures and concepts were not completely learned or understood, but teachers still implemented new strategies and learned new general ideas.

Teachers' reactions to the knowledge RBS brought to schools was based on previously held assumptions and beliefs and their own practical knowledge. These assumptions, beliefs and practical experiences combine in what may be called a "teacher culture." This term is meant to parallel the term "medical culture" used by Becker et al (1961):

> "Medical culture consists of the shared understandings and perspectives of the medical profession as well as of the technology of diagnosis and treatment of human illness. Although it probably possesses a core accepted by all physicians, it varies greatly among functional, regional, and other subgroups of the profession."
> (p. 191)

The teacher culture consists of core understandings and values that emphasize the pragmatic, practical, specific, concrete and personal (Lortie, 1975; Jackson, 1967). Apparently, the implementation of specific strategies and the resistance to more abstract technical procedures and definitions was a result of filtering RBS procedures through teachers' previous understandings and values.

The teachers' preexisting practical knowledge is not a system of knowledge to be replaced, but rather it is a necessary basis for practitioner decision making. An important parallel can be drawn from Freidson's discussion of the medical profession:

> The particularism and moral subjectivity characteristic of the clinical man's work does not mean he is not rational. Much of the medical man's activity can be represented by the process of differential diagnosis: a succession of diagnoses in the form of hypotheses is tested against the available signs and symptoms...The rationality is particularized and technical; it is a method of stating the enormous mass of detail confronting him in individual cases.
> (Freidson, 1972)

The entire process of research into practice can be viewed as a tension between two poles. At one pole, there is research and knowledge about a content area. At the other pole, there is the practical circumstances of schools and classrooms. For new knowledge to be used, it must fit into the practical circumstances of schools and classrooms.

RBS adopted an implementation strategy with stages for transferring knowledge and research. Each of these stages was a social context that filtered, modified and augmented the knowledge and resources that were being transferred. In the RBS experience, the form and content of educational knowledge was strongly affected by the context in which it occurred.

BIBLIOGRAPHY

Becker, H., Geer, B., Hughes, E., & Strauss, A. Boys in white: Student culture in medical school. Chicago: University of Chicago Press, 1961.

Berman, P., & McLaughlin, M. W. Federal programs supporting educational change, Vol. IV: The findings in review. Santa Monica, Calif: Rand Corporation, 1975.

Berman, P., and Pauly, E. W. Federal programs supporting educational change, Vol. II: Factors affecting change agent projects. Santa Monica, Calif.: Rand Corporation, 1975.

Basic Skills Component. Continuation of a program of regional school improvement activities. Philadelphia: Research for Better Schools, Inc., 1979.

Campbell, D. Qualitative learning in action research. Paper presented at the meeting of the American Psychological Association, New Orleans, September, 1974.

Career Preparation Component. Continuation of a program of regional school improvement activities. Philadelphia: Research for Better Schools, Inc., 1979.

Doyle, W. Paradigms for research on teacher effectiveness. In Leo S. Shulman (Ed.), Review of research in education, Vol. 5, Itasaca, Ill.: F. E. Peacock, 1977.

Doyle, W., & Ponder, G. The practicality ethic in teacher decision making. Interchange, 1977-78, 8 (3), 1-12.

Field Studies Component. Continuation of a program of regional school improvement activities. Philadelphia: Research for Better Schools, Inc., 1979.

Firestone, W. Images of schools and strategies for change. Unpublished manuscript. Philadelphia: Research for Better Schools, Inc., 1979.

Freidson, E. The profession of medicine: A study of the sociology of applied knowledge. New York: Dodd, Mead & Company, 1972.

Glaser, B. G., & Strauss A. L. The discovery of grounded theory. Chicago: Adlins, 1967.

Greenwood, P. W., Mann, D., & McLaughlin, M. W. Federal programs supporting educational change, Vol. III: The process of change. Santa Monica, Calif.: Rand Corporation, 1975.

Guba, E. G. Methods of collecting and analyzing naturalistic data. Philadelphia: Research for Better Schools, Inc., 1979.

Havelock, R. Planning for change through dissemination and utilization of knowledge. Ann Arbor: Institute for Social Research, 1969.

Hood, P. D., & Cates, C. S. Alternative perspectives on educational dissemination and linkage perspectives. San Francisco: Far West Laboratory for Educational Research & Development, 1978.

Huitt, W. G., & Rim, E. D. A basic skills instructional improvement program: Utilizing research to improve classroom practice. Presented at the annual meeting of the American Educational Research Association, Boston, Mass., 1980.

Jackson, P. Life in classrooms. New York: Holt, Rinehart & Winston, 1968.

Lortie, D. C. Schoolteacher: A sociological study. Chicago: University of Chicago, 1975.

Pincus, J., and Williams, R. C. Planned change in urban school districts. Phi Delta Kappan, 60:(1):729-733.

Short, E. C. Knowledge production and utilization in curriculum: A special case of the general phenonemon. Review of Educational Research, 1973, 43 (3), 237-301.

Sieber, S. D. Images of the practitioner and strategies of educational change. Sociology of Education, 1972, 45 (9), 362-385.

Stallings, J., & Kaskowitz, D. Follow through classroom observation evaluation, 1972-73. Menlo Park, Calif.: Stanford Research Institute, 1974.

Wolcott, H. Teachers vs. technocrats: An educational innovation in anthropological perspective. Eugene, Ore.: Center for Educational Policy and Management, University of Oregon, 1977.

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For further information regarding these reports contact:

Ullik Rouk
RBS Public Information Office
Research for Better Schools, Inc.
444 North Third Street
Philadelphia, Pennsylvania 19123
(215) 574-9300